

REMARKS/ARGUMENTS

Claims 1 to 5, 8 to 10, 12 to 15 and 17 to 20 are currently pending in this application. Claim 1 has been amended with this response, and claims 13 to 15 and 21 to 36 have been canceled. No new matter has been added with these amendments.

Rejections Under 35 U.S.C. §103(a)

The Examiner also rejected the remaining pending claims as unpatentable under 35 U.S.C. §103(a) over Horton et al., either alone, or in view of one of the following additional references: Lin et al. (USPN 5,735,975) and WIPO Publication No. 00/68469. Applicants respectfully traverse these rejections.

The Horton et al. Reference

The current invention is directed to a dental prosthesis, which "replicates" at least a portion of the surface of a tooth using an amorphous metal using a bulk-solidifying amorphous alloy with a specific subset of properties, including:

- that it be free from Ni, Al and Be;
- that it have a an elastic strain limit of at least 1.2%;
- that it have a high hardness value of at least about 4 Gpa;
- that it have a glass transition temperature lower than 400°C; and
- that it have a coefficient of thermal expansion of less than 10^{-5} [m/m °C].

The specification makes it clear that these specific physical properties are important because they ensure the use of bulk-solidifying amorphous alloys that allow for the replication and maintenance of the highly intricate shapes and surface features of a tooth. The importance of these properties is summarized by Applicants as follows:

[0035] Applicants have discovered that *these characteristics* combined with the lack of any microstructure allow bulk-solidifying amorphous alloys to replicate the intricacies of the impressions in a dental casting with exceptional quality. The casting characteristics of bulk-solidifying amorphous alloys not only reduce the post-cast finishing processes, but

also provide a better surface finish and preparation due to reduced or minimal defects arising from the initial casting operation. For example, a dental prosthesis constructed of a bulk-solidifying amorphous alloy can be given a very high polish and surface smoothness which helps to hinder bacteria growth in the mouth. Further, the high polish and other surface smoothness characteristics can be desirable from an aesthetic perspective as well.

[Specification, paragraph 35, italics added for emphasis.]

In contrast, Horton et al. is directed broadly to the use of bulk solidifying amorphous alloys in any sort of medical tool, device or implant. Nowhere do Horton et al. ever discuss the importance of, or suggest limiting the selection of an amorphous alloy to only those materials having high elastic limits, high hardness, low coefficients of thermal expansion and low glass transition temperatures, as required by Applicants. Indeed, Horton et al. only ever discuss three parameters as being of "importance" in choosing an amorphous material for their "medical devices": hardness/toughness, elastic limit and magnetic or imaging properties. (See, e.g., Horton et al., paragraphs 30, 34, 36, 46, 47 and 48.) Applicants can find no discussion or teaching anywhere in the Horton et al. reference that even suggests that the amorphous material should be selected based on "castability" and "ability to replicate", as required by the claims of the instant invention.

Nor is it sufficient that some of the amorphous materials in the very broad genus set forth by Horton et al. may overlap Applicants' sub-genus. Indeed, it is well-settled law that the fact that a claimed species or subgenus may be encompassed by a prior art genus is not sufficient by itself to establish a prima facie case of obviousness. See, *In re Baird*, 16 F.3d 380, 382, 29 USPQ2d 1550, 1552 (Fed. Cir. 1994) ("The fact that a claimed compound may be encompassed by a disclosed generic formula does not by itself render that compound obvious."); *In re Jones*, 958 F.2d 347, 350, 21 USPQ2d 1941, 1943 (Fed. Cir. 1992) (Federal Circuit has "decline[d] to extract from Merck & Co. v. Biocraft

Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir. 1989)] the rule that... regardless of how broad, a disclosure of a chemical genus renders obvious any species that happens to fall within it.”); and *In re Deuel*, 51 F.3d 1552, 1559, 34 USPQ2d 1210, 1215 (Fed. Cir. 1995). [A full discussion of this point can be found in the MPEP §2144.08.]

In short, while Horton et al. describe a set of properties (hardness, toughness, and elastic limit) that are important, but not sufficient to the proper practice of Applicants' invention. Accordingly, Applicants would respectfully submit that one of ordinary skill in the art, having read the entirety of the Horton et al. reference and its teaching of a broad category of useful amorphous materials, would have had no reason to restrict themselves to only those amorphous alloys that have both the hardness and elastic limit properties set forth by Horton et al., and the coefficient of thermal expansion and glass transition temperature properties taught by the instant application. In light of this deficiency, Applicants would submit that the claims of the instant application cannot be rendered obvious in view of the teachings of the Horton et al. reference.

The Lin et al. and WIPO References

As discussed above, Applicants do not believe the teachings provided by the Horton et al. reference in any way render unpatentable the claims of the current application. Nor do either the Lin et al. or the WIPO references address the fundamental deficiencies of the Horton et al. reference, namely that Horton et al. never teach, disclose or even suggest that amorphous materials should be selected based on the presence of Ni, Al and Be, an elastic strain limit of at least 1.2%, a high hardness value of at least about 4 Gpa, a glass transition temperature lower than 400°C, and a coefficient of thermal expansion of less than 10^{-5} (m/m°C.). Specifically, as indicated by the Examiner both Lin et al. and the WIPO publication are both directed to novel

amorphous alloy compositions, not to dental devices. As such, neither of these references ever provides any discussion concerning which of the many materials disclosed within their pages would provide the improved dental prostheses claimed in the instant application.

Accordingly, Applicants would again respectfully submit that one of ordinary skill in the art, having read the entirety of the Horton et al. reference and the Lin et al. or WIPO references and their combined teachings of broad categories of useful amorphous materials, would have had no reason to restrict themselves to only those amorphous alloys that have both the hardness and elastic limit properties set forth by Horton et al., and the remaining physical properties taught by the instant application. In light of this deficiency, Applicants would submit that the claims of the instant application cannot be rendered obvious in view of the teachings of the Horton et al. in view of either Lin et al. or the WIPO publication.

Obviousness-Type Double Patenting Rejections

The Examiner also rejected claims 1 to 20 over claims 1 to 22 of Applicants' copending U.S. Patent Application No. 10/524,954. Applicants submit herewith an appropriate terminal disclaimer to overcome the subject rejection.

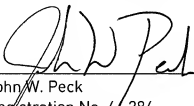
Conclusion

In view of the foregoing amendment and response, it is believed that the application is in condition for further examination. If any questions remain regarding the allowability of the application, Applicant would appreciate if the Examiner would advise the undersigned by telephone.

Respectfully submitted,

KAUTH, POMEROY, PECK & BAILEY LLP

By



John W. Peck
Registration No. 44,284
949.852.0000

JWP/r